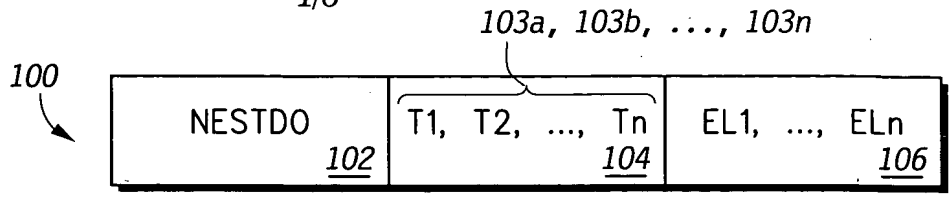


NESTED LOOPING INSTRUCTION:

104 T1 = TERMINATION FIELD 1 – CONDITION TO TERMINATE FIRST (INNERMOST) LOOP
T2 = TERMINATION FIELD 2 – CONDITION TO TERMINATE SECOND LOOP
⋮
Tn = TERMINATION FIELD n – CONDITION TO TERMINATE nTH (OUTERMOST) LOOP

106 EL1 = END OF LOOP 1 – IDENTIFIES LAST INSTR IN 1ST LOOP
EL2 = END OF LOOP 2 – IDENTIFIES LAST INSTR IN 2ND LOOP
ELn = END OF LOOP n – IDENTIFIES LAST INSTR IN nTH LOOP

FIG.1

EXAMPLE – CLEARING OUT A PORTION OF AN ARRAY

STANDARD DO LOOPS (202)

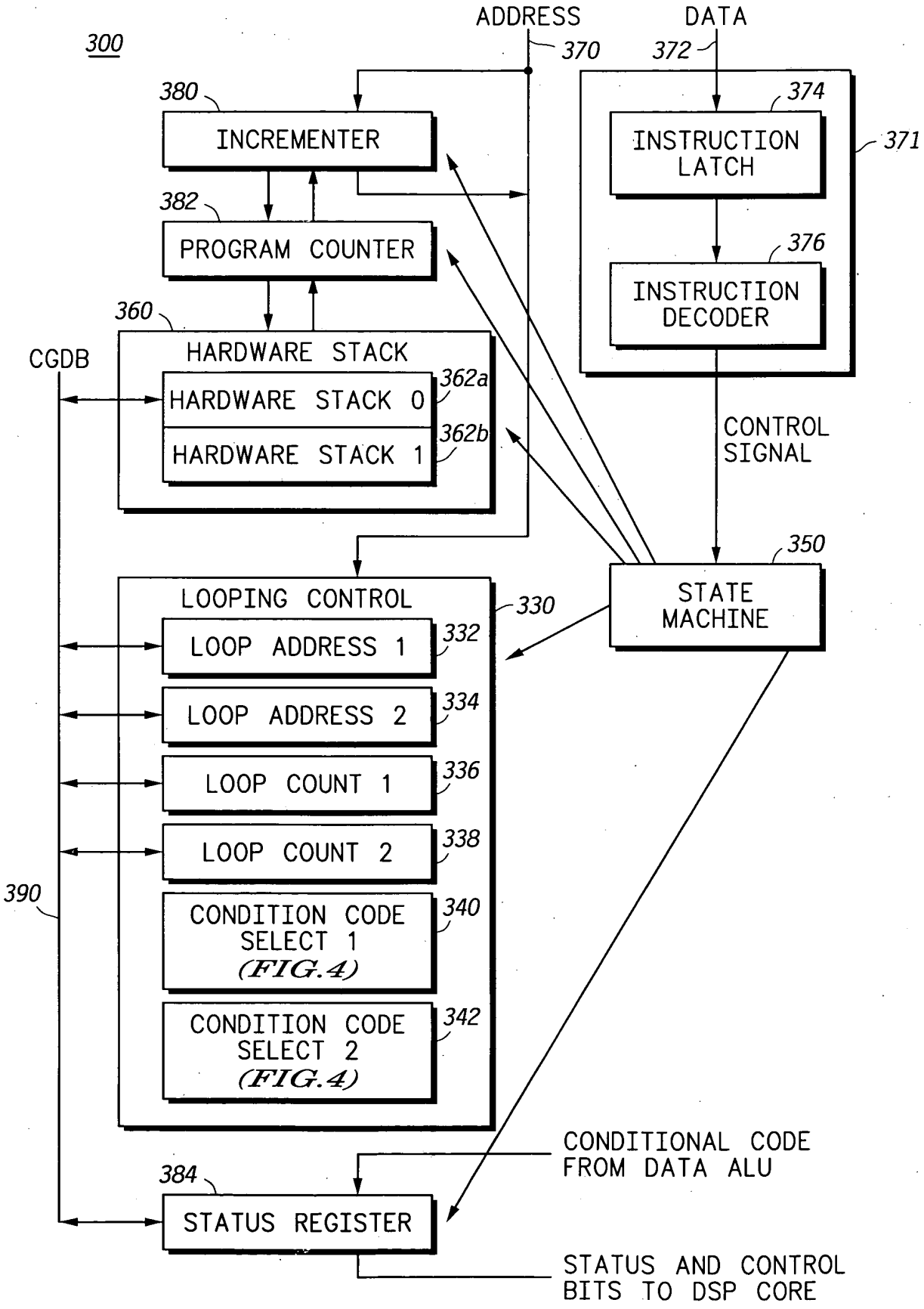
```
CLR I
CLR J
DO #8, LOOPO      (204)
DO #4, LOOPI      (206)
CLR X[I][J]
INC J
LOOPI
INC I
LOOPO
```

NEW INSTR (210)

```
CLR I
CLR J
NESTDO #4, #8,    (212)
LOOPI, LOOPO
CLR X[I][J]       (214)
INC J             (216)
LOOPI
INC I
LOOPO
```

FIG.2

FIG.3


300
ADDRESS
370
DATA
372
380
INCREMENTER
374
INSTRUCTION LATCH
371
382
PROGRAM COUNTER
376
INSTRUCTION DECODER
360
HARDWARE STACK
CGDB
HARDWARE STACK 0
362a
HARDWARE STACK 1
362b
CONTROL SIGNAL
350
STATE MACHINE
LOOPING CONTROL
330
LOOP ADDRESS 1
332
LOOP ADDRESS 2
334
LOOP COUNT 1
336
LOOP COUNT 2
338
390
CONDITION CODE SELECT 1 (FIG.4)
340
CONDITION CODE SELECT 2 (FIG.4)
342
CONDITIONAL CODE FROM DATA ALU
384
STATUS REGISTER
STATUS AND CONTROL BITS TO DSP CORE

EXAMPLES OF CONDITION CODE TYPES		
ID	ENCODING	DECRIPTION
CC	000	CARRY BIT CLEAR
CS	001	CARRY BIT SET
EQ	010	EQUAL
NE	011	NOT EQUAL
GE	100	GREATER THAN OR EQUAL
GT	101	GREATER THAN
LE	110	LESS THAN OR EQUAL
LT	111	LESS THAN

400

FIG.4

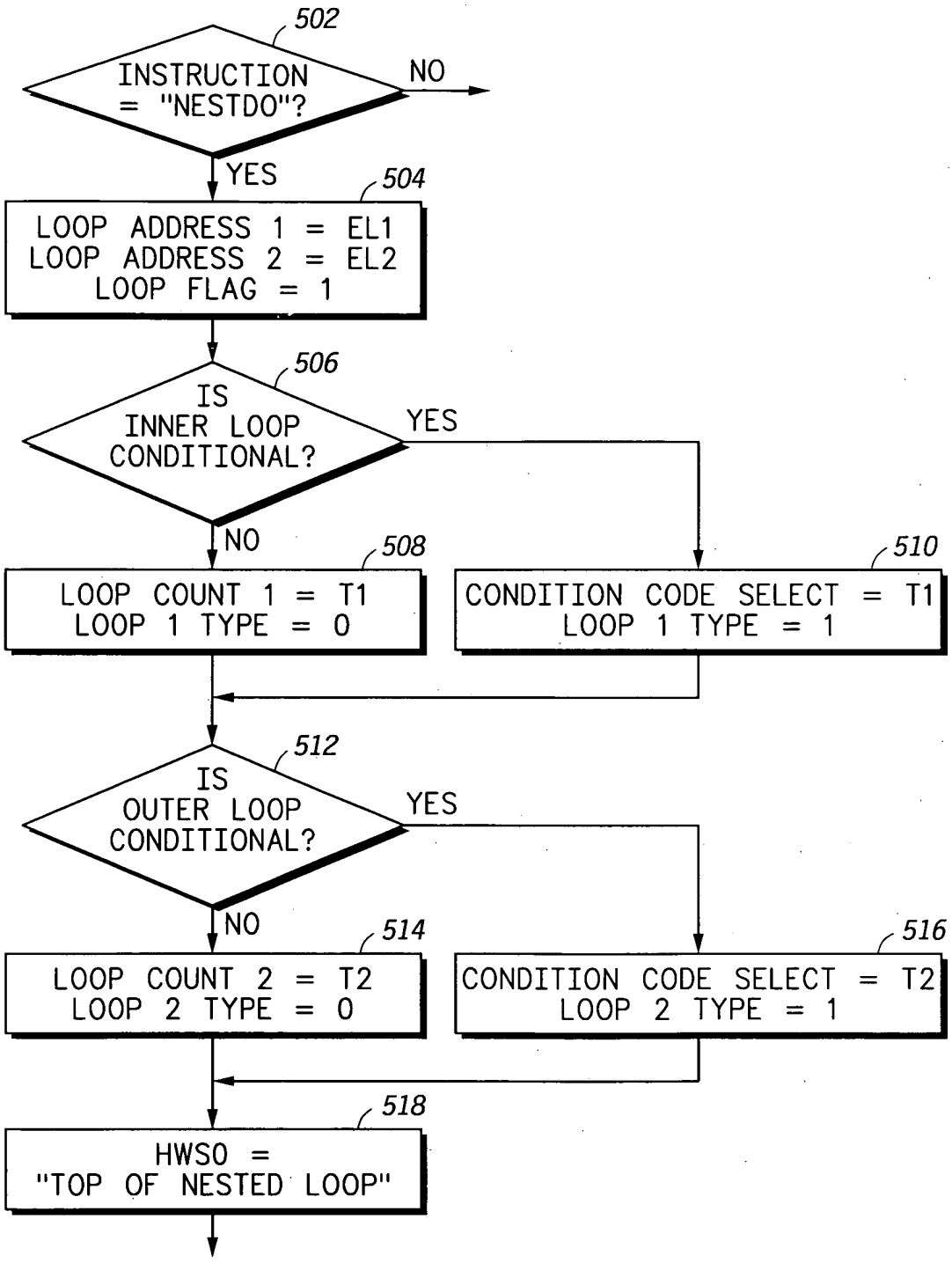

502
INSTRUCTION = "NESTDO"?
NO
YES
504
LOOP ADDRESS 1 = EL1
LOOP ADDRESS 2 = EL2
LOOP FLAG = 1
506
IS INNER LOOP CONDITIONAL?
YES
NO
508
LOOP COUNT 1 = T1
LOOP 1 TYPE = 0
510
CONDITION CODE SELECT = T1
LOOP 1 TYPE = 1
512
IS OUTER LOOP CONDITIONAL?
YES
NO
514
LOOP COUNT 2 = T2
LOOP 2 TYPE = 0
516
CONDITION CODE SELECT = T2
LOOP 2 TYPE = 1
518
HWS0 = "TOP OF NESTED LOOP"

FIG.5

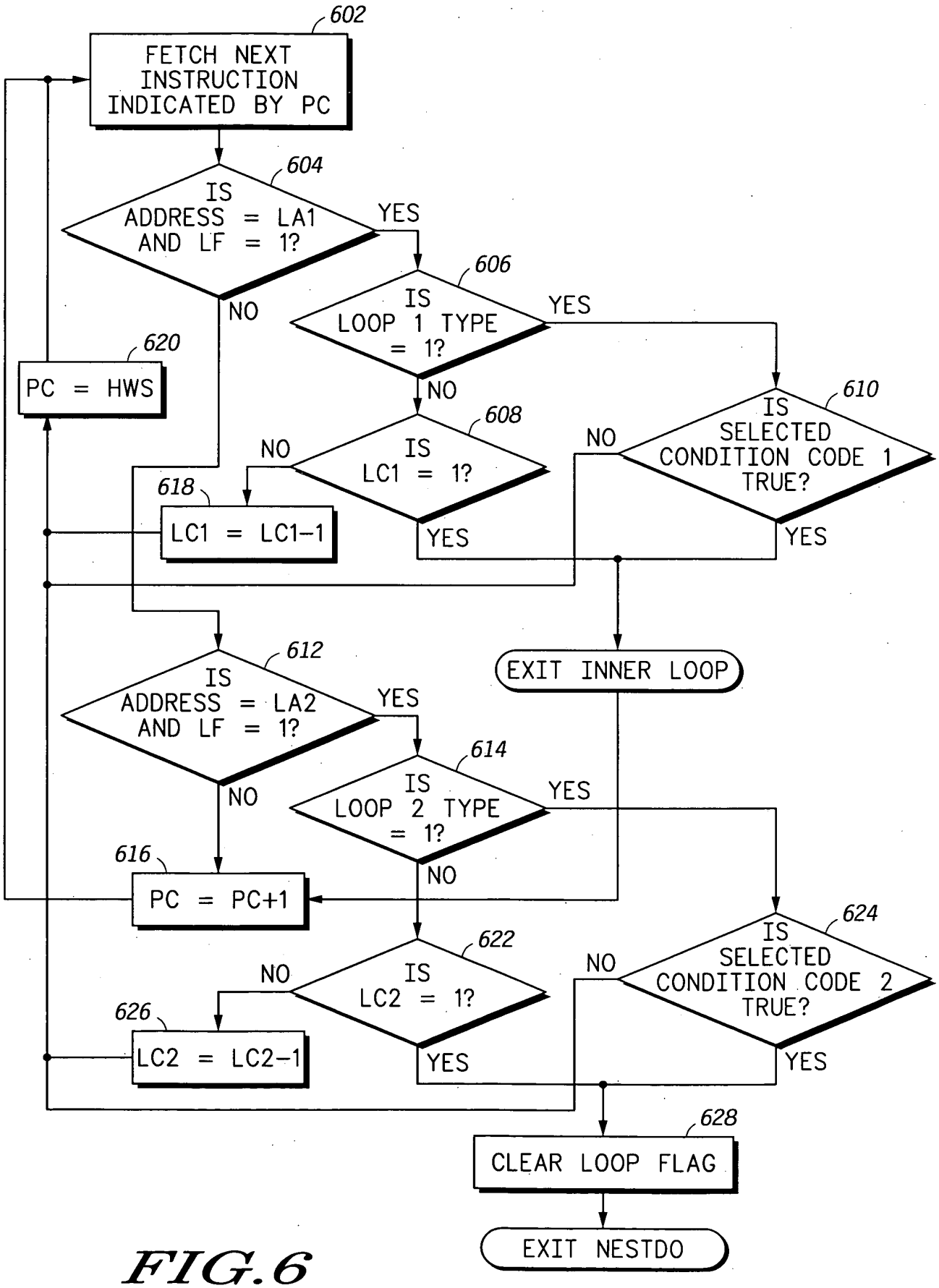

602
FETCH NEXT INSTRUCTION INDICATED BY PC
604
IS ADDRESS = LA1 AND LF = 1?
YES
NO
606
IS LOOP 1 TYPE = 1?
YES
NO
620
PC = HWS
608
IS LC1 = 1?
NO
YES
610
IS SELECTED CONDITION CODE 1 TRUE?
NO
YES
618
LC1 = LC1-1
EXIT INNER LOOP
612
IS ADDRESS = LA2 AND LF = 1?
YES
NO
614
IS LOOP 2 TYPE = 1?
YES
NO
616
PC = PC+1
622
IS LC2 = 1?
NO
YES
624
IS SELECTED CONDITION CODE 2 TRUE?
NO
YES
626
LC2 = LC2-1
628
CLEAR LOOP FLAG
EXIT NESTDO

FIG.6

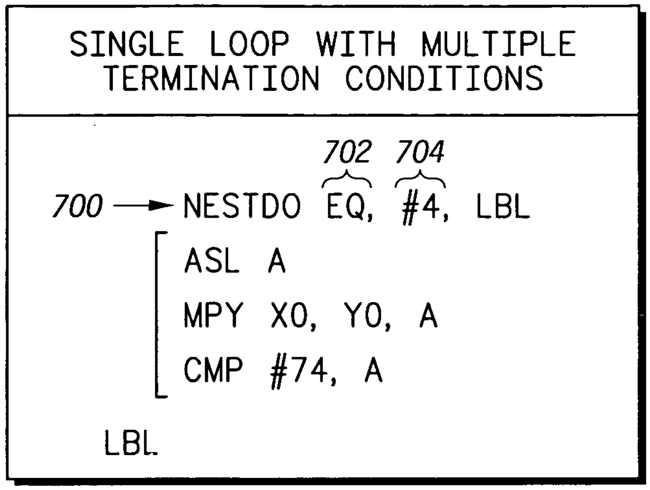


FIG. 7